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The real estate market as the foundation of the value and forecast as a purpose: trend and real estate cycles*

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The purpose of this project is that of inquiring around the relations existing among the main variables characterizing the Genovese residential real estate market which determine their performance in time through the data analysis of the two observers of the real estate market: ASSIMIL and OMI.

The analysis has developed on five selected market homogeneous areas within the territory of the town of Genoa. The aim is that to test whether it's possible or not to recognize a cyclical of values in time and how they appear by using two different sources of data.

The correct forecast of the real estate market is, in fact, strategic for the valuation of the feasibility of interventions and for the construction of reliable real estate investment scenarios.

Key words: *real estate cycle, real estate data, real estate variables*

1. Introduction: forecast and market

The aim of the present work was born in order to put through an operational application, more or less through an operative application around the forecast and the marking of an estimate of the most probable market value of a real estate property.

From the disciplinary point of view, we can briefly say that there are, as far as this proposal is concerned, two not fully converging positions.

- Approach of the classic estimation school: in which, according to the principle of permanence of all conditions, the assessment must be made by considering the most elements tested at the time of the estimate itself. In that sense, the forecast period is strongly limited by the conditions in which the evaluation is carried out. The proponents of this thought, are based on the cite always coming in support of their thesis: that's to say a sentence written by Benedetto Croce which says: *"Forecast is an emphatic and imaginative way, not only to express the future, which we know nothing at all about, and that represents therefore a matter of knowledge, but the present itself"* (Marone and Menghini 2011);
- Approach of the new Anglo-Saxon school: where the forecast factor has a strategic importance. According to this sense, the predictions around this idea are ba-

* The work was developed by the two authors. However Paolo Rosasco has cared the paragraphs 2 and 3. Leopoldo Sdino has cared the paragraphs 1 and 4. The paragraph 5 (conclusions) was written jointly by the two authors.

sed and often quote in support of their thesis a sentence written by Adam Smith which says: "*Evaluating is already forecasting*" (Lunghini 1998, p. 21).

Though all the positions are recently trying to find an equilibrium point, especially in the manuals showing the guide lines of the assessment, the differences are still significant in the discipline and, even in a less clear way, in the estimative practice.

From the classic methodological point of view, the forecast value is in fact, a judgement assessment which has been now formulated, but which remains constant over time only in the name of the prerequisite conditions taken. But just in the name of the science and the hypothesis placed at the basis of the assumption of the forecast, the difference and the same harmonization of these two approaches can be traced. The element of convergence is just in basing the forecast and a rigorous historic analysis of the housing market that represents, at last, a place where you will be expected to form the price, as well as the factors forming it through the two components of demand and supply.

All that is more true in the current economic situation where, during the medium term and sometimes in a short one, the demand factors and those of supply can be considered essentially variable.

Whether the assumed forecast is to be considered justifiable in the estimative operation of the existing goods, where the period of permanence on the market before their allocation has recently spread, it becomes essential in the evaluation of the future goods or in the main ordinariness conditions, such, for instance, the discount cash flow analysis of real estate investments that will become a real offer of the market in a generally consistent time and with different conditions from those present at the moment of the estimate.

All that is to say that the basic law of the market, in case of demand contraction, is supposed to decrease the quantity and price of trades.

Thanks to the present work, then the Authors' purpose is that of showing a general scientific study around the two main variables on the Genovese real estate market (numbers of sales and prices), based on two different data sources, even in order to show the homogeneity or less about the final results themselves.

On the other side, coming back to the forecast, the "ones" present on the market (consumers, producers and authorities), when they have to take a decisions about a real estate, they must consider both the past experience and the future forecasts.

As far as all this is concerned, the appraiser's task is that of giving as many secure refers as possible to the market by which the individual choices of buying, selling or keeping, can be taken.

2. The analysis of the real estate trend

The study of the real estate markets and particularly of its values over time is to be connected to the analysis of the influence that the main *internal* and *external*

factors (endogenous and exogenous ones) of the market exert on the level of prices (or on the level of the fees of renting) of the properties belonging to a certain real estate branch.

In these last years the scholars' attention has concentrated on the study of the most significant variables that are able to exert a particular influence both on the market trend and on the experimentation of models able to represent the changing of values over time.

In general, the factor dynamics interest essentially the changes of the real estate demand and offer that can have direct effects on the level and trend of prices. The change of one of the two components causes, in fact, variations and adaptations of the level of price and volume of sales (or locations) till the market itself isn't able to reach a new equilibrium point. The entity and duration of the equilibrium phase depends both on the variations and the branch of the inquired market (residential, commercial, tertiary and productive).

The effects originated by the *internal* factors are the most recognizable ones, because they are directly connected to the economic and productive characteristics of the real estate sector. It's a very clear example that, inside a certain real estate area and branch, the new building production gives origin to an increase of the offer on the property market, whose effects can be clearly seen, in a short time, both around the level of prices and sales.

The influence generated by *external* factors (exogenous) on the real estate market is the most complex and difficult one to be recognized, because it's generated by macro-economic elements, which are not always easily connected to the market; also the effects generated by all that depend not only on the action exerted by the single variable, but often on the simultaneous action that the different variables exert on the real estate offer and demand. Just think on the effects (negative) generated in the short period on the real estate by the simultaneous increase of the tax on the properties and the increase of inflation. The real estate demand will tend to decrease then, both due to increased taxes that will affect the properties (and that will discourage the purchase of properties) and for the less ability to save by non-homeowners, who will even see the decrease of the opportunity of paying the instalments useful to finance the purchase, due to the higher rate of interest. In this regard, are very interesting the studies recently carried on about the "Index of Access to the Market" (*House Affordable Index*) by the Observatory on the Real Estate (OMI) of the Agency of Territory, in collaboration with the Italian Banking Association (Agenzia del Territorio 2012). Among all the most important exogenous variables, we can remember the entity and trend of inflation over time, the demographic and social changes of the population, the taxation of properties.

In the presence of economic and real estate realities, more and more characterized by conditions of uncertainty, the correct forecast of the real estate value is then one of the main aspects of the real estate valuation. It can be developed through relevant data present on the market, and through the application of instruments and valuations models, which are able to interpret correctly the training functions of the values over time (Lunghini 1998).

From the analysis of the most specialized literature, which refers to the study of the real estate markets, there are two different approaches to the study:

- the first one is of *statistical-mathematical* kind and sees the testing of more or less complex econometric models, in which the endogenous and exogenous variables considered significant for the market are simultaneously inserted in predicting the trend of prices and volume (number) of sales (or of locations) of properties over time. This kind of models (prepared, for example, by the International Monetary Fund), usually use economic variables on a national scale such as: national trend of the stock market indices, the interest rate at short-medium and long term, the real level of household income, the time of trend in prices (or in royalties) of properties;
- the second kind is that *statistical-descriptive* and investigates instead, by using dynamic panels of data, the price changes (or rent) of properties (distinguished according to their intended use) with respect to a particular variable (exogenous or endogenous to the market). That's to say that unlike the previous models, the analysis consider two variables at a time (one of which usually is the price and the income of the property itself) and they have mostly developed through the analysis of the correlation values over time. The identification of the possible significant correlations (positive or negative ones) among the couples of variables and the cycles of values over time, allow the identification of the "determinants" on the market and then the development of the forecast about their future trend. Similar to this type of application are all the studies carried on by Janssen, Kruijt and Needham (Janssen, Kruijt and Needham 1994) which correlate a number of transactions around prices over time (whose relation is to be presented through the geometric shape of an hexagon or a "honeycomb") or that made out of "four squares", studied by DiPasquale and Wheaton (DiPasquale and Wheaton 1995). An interesting collection commented by these models is presented in a study by Amato (Amato 2006).

The testing of the different models of interpretation of the real estate market has showed that the same is characterized by cycles which can simplify and make more reliable the analysis of the forecast of values¹. It's possible, for instance, to identify cycles in the housing market and to put into relation the main variables such as: the level of the real estate demand and offer, the percentage of the vacant or unsold, the level of prices and fees and at last, the level of the investments as far as this field is concerned.

The literature pays attention to the main cycles having different sizes (Bravi and Fregonara 2004, p. 84):

- *long term* cycles, whose temporary period ranges from a minimum of 20 years to a maximum of 50 years;

¹ "In economic field, the notion of cycle indicates the recognition of historical constants in the alternation of phases of prosperity and decline, growth and recession" (Bravi and Fregonara 2004, p. 82).

- *medium term* cycles, whose temporary period varies from 3 to 7 years;
- *short term* cycles, whose temporary period ranges from few months to few years, and that are characterized by the seasonal variability of sales and leases.

A little bit different are the durations and amplitudes of the cycles in the calculations performed by the Bank of Italy (Panetta 2009), where there is an exercise of revision based on the analysis of the historic series of data. Literacy point out on the difficulties that it's possible to meet in such type of analysis, essentially attributable to time irregularities and special less of homogeneity (even inside the same urban area), that restrict the formulation of reliable prediction of the trend values in a medium and short period. Very interesting, because of their methodological simplicity and reliability of the results they provide, are all those models correlating the number of sales to the prices (medium ones) of the properties; if implemented with a number of data collected in a systematic way on the market, and sufficiently representative of the investigated segment, such analysis permits the forecast of the market trend in a very short time. The experimentation of such models must also consider the atypical and uniqueness of the property market, strongly influenced by the technical, economic, physical and urban conditions of that context.

Even referring to the more classic, among the economic laws, that's to say the one of the demand and offer, we could say that when the prices rise, the number of sales of the properties should get off, or that when the supply rises, the prices of the property should get off; on the real estate market, on the contrary, the prices and the number of sales can rise or get off (within very short time) both contemporary (Lunghini 1998, p. 22).

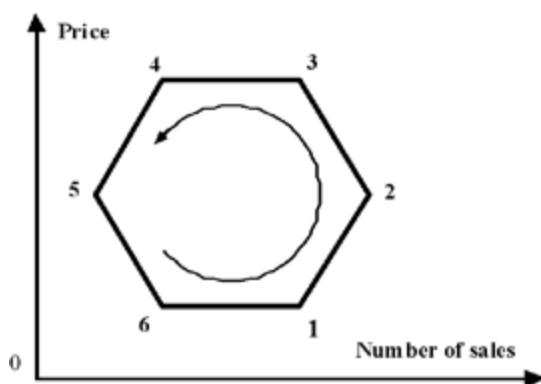
3. The "honeycomb" cycle of the real estate market

One of the well-known models as far as real estate market is concerned, and that puts into relation the number of sales having medium price of residential properties, is that called "*honeycomb*".

According to the Authors of that theory (Janssen, Kuijt and Needham 1994), the internal dynamics of the real estate market can be showed (over time) according to the shape of an hexagon (Figure 1); the schematic derives from the observation that, on the contrary to the other kind of markets, inside the real estate one a disconnection between variation of the requested/offered goods and their prices can be recognized, essentially driven by the particular characteristics of demand and offer as well as from those physical and economic of the goods which are to be traded. As far as real estate is concerned, the variation in demand doesn't give origin to an immediate variation of the offer itself, even during short times of production of the same good; before reaching a new equilibrium point, the market has a set of oscillations which come before they can reach the real equilibrium point. The real estate demand reacts even slowly to the variations of prices and the same does the offer, which is bound by long times of production of the good.

These oscillations also are attributable to the fact that a huge part of the real estate offer, not only derives from the new building production, but even from the existing building heritage. Right in the residential segment, the great majority of all transactions is generated from a change of residence; according to the same authors, the real estate market cycle can be then analysed starting from the relations existing between demand and offer².

Figure 1. Relations among medium prices and the number of sales represented according to the "honeycomb" graphic.



According to the Dutch researchers, the relations between the time trend of volume of trading and the medium level of prices can be distinguished in six different phases, each one is characterized by a typical level of price and volume of trading; the duration varies more or less from 9 to 10 years (Janssen, Kruijt and Needham 1994, pp. 241-244).

With reference to Figure 1, each of the six phases can thus be schematized (Janssen, Kruijt and Needham 1994, pp. 241-244):

² In the picture of this theory, the Authors' purpose is to divide the demand from the offer in *primary* and *secondary* one (Janssen, Kruijt and Needham 1994, pp. 240-241). The demand is to be considered a *primary* one when the person who requests a real estate good on the market is not the same who offers (at the same time) on the market another real estate good (change of residence); similarly we have the *primary* offer when the person who puts a real estate good on the market doesn't request (at the same time) another good. On the contrary the demand is called *secondary* when the person who requests a property is the same who offers the property itself on the market, while the offer is *secondary* when the person who puts the good on the market requests (at the same time) another good (change of residence). The distinction is crucial to understand the relations existing between price and amount of exchanged goods. The *secondary* offer has, in fact, some different reasons from the *primary* one, and the same happens for the *secondary* demand. Their behaviour is characterized by the value of the good they offer at the same time on the market. In Italy we can find more *secondary* demands, whose variations influence significantly the level of prices.

- Tract 1-2: starting from an initial situation of stability of the real estate market we can suppose that the demand for properties increases. The offer will increase the same and will give then birth to an increase of the number of sales without affecting the prices (initially, at least) of these changes. The demand will then tend to increase, so will the prices;
- Tract 2-3: the real estate offer on the market slows down, even due to the progressive sale of those previously entered goods and the lag of new buildings that are being built. The demand still tends to increase even because the buyers fear a subsequent rise in prices. All that causes an effective and further prices increase;
- Tract 3-4: the rise of prices causes a decrease of the demand. At the same time the offer reduces the number of properties existing and to be put into the market and even reduces the realization of new properties that are, due to the phase displacement of buildings production, still released in large amounts on the market. The demand decreases by giving origin to a fall of the volume of exchanges, without a fall of prices;
- Tract 4-5: the demand, discouraged by the new market conditions (characterized by high prices and reduced availability of properties), goes on in decreasing, giving origin to a consistent decrease of the volume of exchanges and to a fall of prices;
- Tract 5-6: the new conditions of the market, most of all in the less level of property prices, lead to a new increase of the demand. All this, together with the new buildings that, in the end, begin to be sold, generates an increase of the volume of sales, even if prices get on in decreasing;
- Tract 6-1: the demand always tends to increase, the offer is stable at the beginning at equal levels as prices remain constant. In a second time the offer isn't able to meet the greater demand of properties, and so the prices begin to increase again (point 1). These conditions cause the turning point on the market, and close the cycle in order to start a new one.

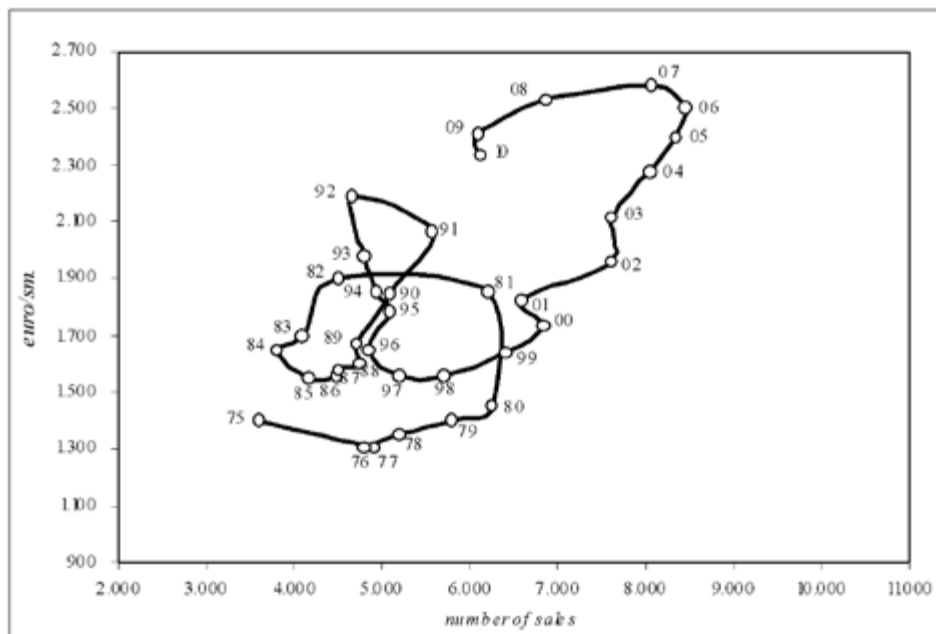
The representation in the Cartesian plane of the relation between prices and volume of exchanges over time (number of sales) leads to a geometric picture which reminds us the "honeycomb", or commonly an hexagon in the reality. The graphic representation of the relations between the two variables shows a shape which takes more after a spiral that, in closing on itself, varies (over time) its references (prices-number of sales).

The application of this theory to the national real estate for the period 1975-2010, leads to the representation of the Figure 2³.

As we can see from Figure 2, the representation of the connection existing between the two international real estate market variables is like a spiral which schematizes two complete (close) real estate cycles over time, one of which still in progress, particularly:

³ Processing on the data: Nomisma, Gabetti, *Annuario Immobiliare*, OMI (Agency of Territory) for the unitary values on the market; Ministry of the Interior and Agency of Territory for the number of sales.

Figure 2. Italy - Relations among medium prices of the residential properties and the number of sales (at constant prices 2010).



- the first complete cycle is that going from 1975-1988 (13 years);
- the second complete cycle is that going from 1988 to 1998 (10 years);
- the third is still in progress and it's the one which has begun in 1998.

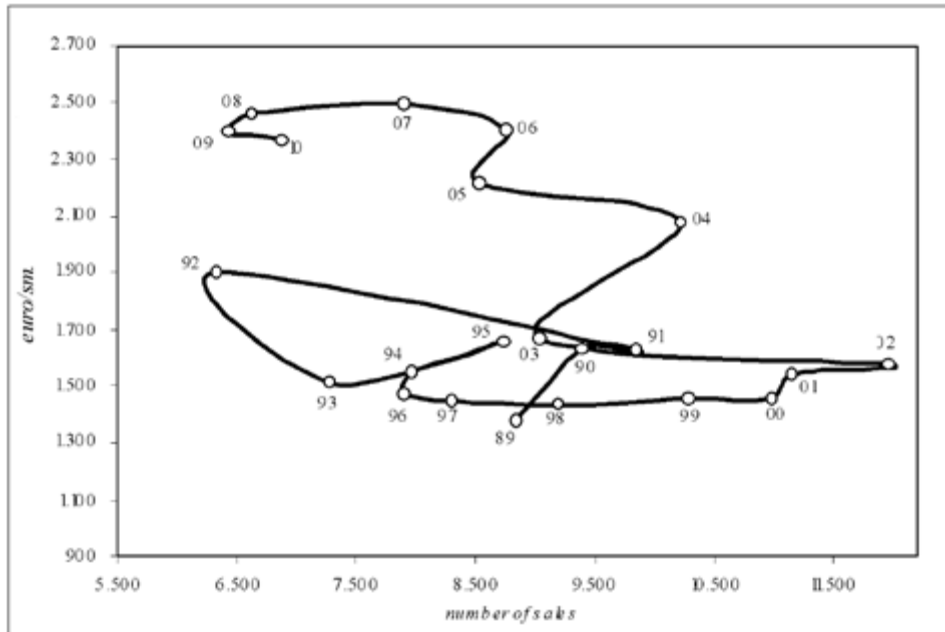
The national real estate market is then decreasing as far as the medium prices are concerned, and all that is happening starting 2007 and it's still in progress. This phenomenon will probably also affect the year 2011⁴. In the next phase (that according to the scheme represented should not begin before the end of 2012), the medium prices of all properties should, for a certain period, stabilize at the level of 2011 and the real estate cycle should stop in order to restart (the beginning of a new cycle).

The analysis developed on the real estate market in the city of Genoa leads to a similar representation of the relations existing between the two variables over time, though with some differences (Figure 3)⁵.

⁴ At the moment when this work was written were not available the results of the year 2011.

⁵ For reasons attributable to the availability of the data, the analysis is limited to the year 1989-2010. As far as the calculation of average unit prices is concerned were taken as reference the values published by the market Observatories: ASSIMIL (Association for the Study and the Information about the Real Estate Local Markets), Gabetti, *Annuario Immobiliare* and OMI (Ob-

Figure 3. Genoa - Relations among the medium prices of the residential properties and the number of sales (at constant prices 2010).



During these last years the Genovese market has been characterized by a “complete” cycle connected to the period going from 1988 to 2000 (11 years), to an “incomplete” cycle of the period going from 2000 to 2003 and by a cycle began in 2003. The analysis highlights clearly that during some temporary periods, the relations between the two variables don’t resume the “honeycomb” theory; that’s to say that the six stages follow according to different ways from the ones represented in the Figure 1.

We can say that Genoa, during the last 20 years, has been characterized by very deep urban refurbishment realized during three important events which have taken place in the town: the Colombians in 1992 (celebration of the five centenary of the discovery of America); the G8 summit of the most industrialized nations in 2001; Genoa as the Capital of the European Culture in 2004.

servatory on the real estate market of the Agency of Territory). The number of trades has been obtained for the years 1989-2001 from the *Annuario Statistico* of the Municipality of Genoa, while as far as the following years are concerned (2002-2010) the normalized number of transactions (NTN) has been used. These last data, together with the values on the market of the homogeneous areas OMI, used in the following processing, were provided by the Agency of Territory - Central Directory of Real Estate Observatory and Estimative Services - Real Estate Market Observatory Area that we thank for the kind cooperation.

The inventions made during such events regard the development and the maintenance of many urban spaces, the enhancement and pedestrianization of some historic roads and the building of new infrastructures (such as the subway) or the enhancement of existing ones. These interventions have given birth to a general development of the built heritage in the central part of the town (evident phenomenon especially in the historic area) having a significant increase in the value of residential properties in many neighbourhoods.

Even within the limits of a schematic representation which can't be generalized like all the other segments, real estate market (commercial, productive, etc.), the theory of the "honeycomb" cycle permits anyway a significant representation of the relation existing among the universally accepted indicators as more significant, that's to say: the price (unitary) of the properties and the number of sales.

For the proper representation of the course of the relations between the two market variables over time and of the predictive reliability of the values, is then fundamental the use of the data collected in a systematic way on the real estate market.

In this kind of analysis, the mostly critical affects the unitary prices of the properties; the different observatories of the real estate market which operate at national and local level, show, in fact, the prices according to different modes which make the data not comparable among them. These concern: the indication of the dimensional parameters of the properties respect to which the unitary values are calculated (net area, gross one, commercial and conventional one); the spatial references of the values (centre, semi-centre, periphery, rural area, urban, suburban one, neighbourhood, urban unity, main roads, etc.); the condition of the property (new, very good, normal, used, restructured, recent, obsolete, to be restructured, poor); the source of data (Real Estate Registry, estimation for adherence by mortgages with credit institutions, Real Estate Agents, building society).

These aspects are the most critical that we can see among those kind of applications and that often lead to not reliable forecasts about the trend of values over time.

4. The "honeycomb" cycle of the real estate in Genoa

In order to occur as the use of the detected data from different real estate market observatories can affect the results and forecasts of the trend values over time, an analysis around five real estate areas has developed in the town of Genoa. All these areas have been selected among the homogeneous OMI zone of Genoa, identified by the Agency of Territory (Provincial Office of Genoa) together with the Municipality of Genoa. They identify, on the territory itself, real estate homogeneous market segments in which can be noticed a substantial uniformity of appreciation as far as the economic, social and environmental, urban and building conditions are concerned⁶; their spatial position is shown in Figure 4.

⁶ The homogeneous area OMI derives from cadastral micro-zones introduced by the article 2,

The five OMI zones have been selected by taking into account their position inside the territory of the town of Genoa in order to represent the different actually typological and building realities of the Genovese real estate; the destination and main use of the properties is residential. According to the market values, the data detected by the two observatories ASSIMIL⁷ and OMI⁸ have been used as far as the volume of trades we have referred to the “Number of Normalized Transactions” (NTN) published by the Agency of Territory⁹.

The main differences in methodology of data collection on the market by the two Observers can be described like that:

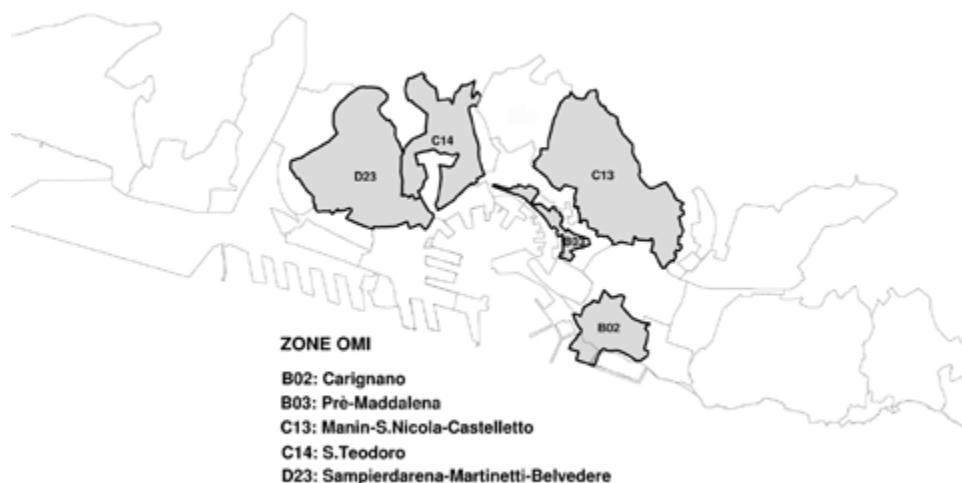
paragraph 1, of the D.P.R. n. 138/1998. They are described as “portions of the municipal territory, or in the case of areas made by groups of town halls, which show homogeneity, as far as the particular position, as well as the urban, historic-environmental, socio-economic and also as far as the provision of urban services and urban infrastructure”.

⁷ The Association for the Study and Information about Real Estate Local Markets. The Association was born after a project of research developed and carried on by Professor Guido Dandri from the University of Genoa, detect from 1999 the prices and the rents of the property having different use situated inside the town of Genoa, Savona and in some other Municipalities of the two Ligurian coasts. The data collection is a via card one, where are shown 32 characteristics of the property put into market in order to be sold or rented. Such cards are compiled by more or less 90 Estate Agents united in a Panel. The prices and rents are those established by the offer and demand (that's to say real ones). The destinations for the use detected are residential, commercial, productive and tertiary. The data are collected in a data-base available on line for the Associated. Starting from 1999 till nowadays have been collected more or less 4.700 schedules. For best information please go and visit the site: www.assimil.org.

⁸ Observatory on the Real Estate Market by the Agency of Territory. The collection of all the data is made according to three ways: *directly* through the completion of the institutional tasks in the financial statement verification of the prices quoted in the notes of transcription; *punctual assessments*, carried on by the offices of the Agency of Territory, that operate on a technique-estimative field; through *the cooperation together with other authorities* (public and private) acting thanks to different purposes on the real estate market, among these ones there are: FiAiP, FIMAA, AICI (National Association of Consultant and Real Estate Managers), CNI (National Council of Engineers), INU (National Urban Institute), Professional engineers and Architects, Tecnoborsa and many Municipalities of Italy. These authorities are united in a “joint consultative Committee for monitoring the real estate values”. As far as the different conditions of use are concerned (residential, ancillary of residential, commercial, tertiary and productive), the data are collected every six months as a function of the Province, the City and the homogeneous area OMI. The unitary values of the market which are referred about the different destinations of use concern both the sale and the rent: they are expressed in relation to the minimum and maximum value seen inside the area itself, and as a function of the different kind of properties present (as far as the residential one is concerned, villas and cottages, mansions, homes, affordable housing, typical housing of the places), and of the conservative state more frequently noticed inside the area (normal, brand new, poor). The values collected inside the single homogeneous areas OMI can be found on line directly on the site of the Agency of Territory: on the same site it's also possible to see and download the perimeter of the homogeneous market areas. For further information go and visit the site: www.agenziaterritorio.it.

⁹ They are declared as “the number of normalized transactions with respect to the ownership stake sold, which as happened in a certain period of time (Agenzia del Territorio 2008, p. 151). It's a data taken from the Data Bank of the Offices of the Real Estate Advertising.

Figure 4. The five homogeneous areas OMI selected for the analysis.



- *spatial references data:*
 - ASSIMIL: Districts (8) - Neighbourhoods (25) - Urban Unities (71) - roads and building house numbers;
 - OMI: homogeneous areas OMI (89), identified through a special mapping;
- *surface residential properties:*
 - ASSIMIL: commercial surface¹⁰;
 - OMI: cadastral surface, just like it's called in the Annex C of the D.P.R. n. 138/1998¹¹;

¹⁰ The *commercial surface* is given by the sum of the gross surface area (SLA) and of the ancillary areas and unique discoveries homogenized according to the following coefficients: floor terraces/ balconies: 0,30; not on the floor terraces/balconies: 0,15; adjoining cellar 0,50; not adjoining cellar 0,25; other not adjoining surfaces: 0,25; garden: 0,10. The habitable gross floor area (SLA) it's the area of the gross measured real estate unity of the perimeter walls, of the internal partitions and of half partition adjoining with the other real estate unities or with the parts in common.

¹¹ The technical standards contained in the Annex C of the D.P.R. n. 138/1998 defines the cadastral surface of the real estate classified groups as "R" (real estate unities having a housing private destination and locals having a private complementary destination), and "P" (real estate unities having a public or collective destination) as the sum of :

a) the surface of the main compartments and of the accessory compartments having a direct service to the main ones, such as bathrooms, inputs, closets, hallways, etc.;

- *market values of residential real estate:*
 - ASSIMIL: the medium values of the market published are calculated starting from the true prices of sales expressed according to a unit minimum, medium and maximum value. They haven't any reference to types or states of maintenance, even if the residential properties must be habitable in order that their price must be considered as far as the calculation of values is concerned;
 - OMI: the values are made on the base of a sample of prices referred on the notes of transcription and through assessments "on time" carried on by Offices the Agency of Territory. Inside the OMI areas, each type shown and each possible state of assessment (very good, normal, poor), they are pointed out according to a medium value, as far as the residential destination and use are concerned.

The locational, typological and urban planning characterizing the five selected OMI areas are shown in the Table 1.

Table 1. Characteristics of the five OMI areas selected for the analysis.

Area OMI	Position	Predominant housing type	Medium year of building	Presence of public services	Presence of commercial services	Presence of transport services	Index IMI* 2010
B02	Central	Civil	1920	Good	Good	Good	1,78%
B03	Central	Civil	1920	Normal	Normal	Normal	3,09%
C13	Semi-central	Civil	1920	Normal	Normal	Normal	2,19%
C14	Semi-central	Civil	1955	Poor	Normal	Normal	2,40%
D23	Peripheral	Civil	1950	Poor	Poor	Normal	2,39%

* Intensity housing market represents the percentage quote of the real estate unities that are object of sale.

Source: Agency of Territory.

In order to better make out the characteristics of the real estate market segment relative to each area selected, in Figure 5 the unitary prices of the properties

b) of the surface of the accessory compartments having an indirect service to the main ones, such as attics, basements, cellars and similar computed in measures:

- of 50 per cent when communicating with a);
- of 25 per cent when they aren't communicating;

c) of the surface of balconies, terraces and similar ones, of exclusive relevance of the single real estate unity, computed in measures:

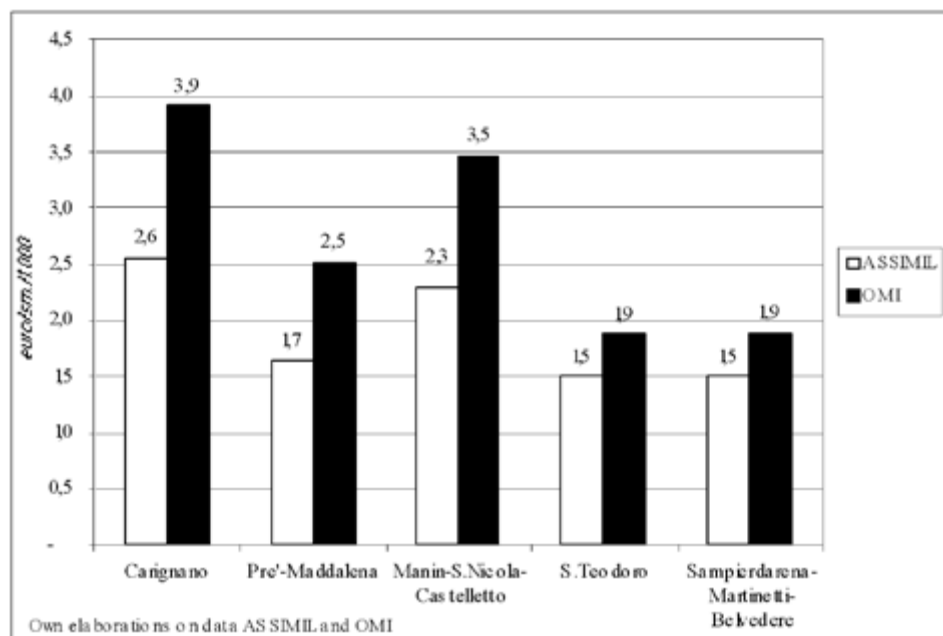
- of 30 per cent, till 25 square meters and of 10 per cent as far as the excess quota is concerned, when such relevance are communicating with the compartments relative to letter b);
- of 15 per cent, till 25 square meters, and of 15 per cent as far as the excess quote is concerned, when they aren't communicating.

of the year 2010 are referred by the two Observers¹².

A first analysis of the values noticed by the two Observatories has developed by taking as a reference the whole territory of Genoa.

In relation to the analysis made through the ASSIMIL data, the medium values of the residential properties, situated in the OMI homogeneous areas have been considered, though the schedules compiled by the Agents of the Panel use as a reference the Neighbourhood and the Urban Unity (that represent the minimum urban-administrative unit defined by the Municipality of Genoa), this has been possible through inquiring the data-base ASSIMIL by showing the road in which the property on sale is situated and to be connected to a certain OMI area.

Figure 5. Medium prices detected in the five areas by the ASSIMIL and OMI Observatories (year 2010).



Where a road is near more OMI areas the shown sales price has been considered for the purpose of calculating of the medium value, only if and when, in the

¹² The differences around the medium prices detected by the two Observatories derive from the fact that for the OMI Observatory the medium values calculated are relative to real estate properties having a "normal" state of conservation.

survey form, has even been shown the civic number of the building where the property is situated, and then, has been possible, as a consequence, the localization inside only one OMI zone.

For reasons connected to the action of the two Observatories and the consequent availability of the market data, the period of time taken in consideration, as far as the analysis of the trend values of the two variables is concerned, it's then relative to the last ten years (years 2000-2010).

Figure 6 shows the trend of the two indicators in the decade by taking as a reference the prices of the market analysis put into evidence by ASSIMIL in the neighbourhoods of Genoa¹³. It shows that similarly to all what had emerged before from the analysis developed thanks to the data of the different Observatories (Figure 3), during the year 2000 a new cycle of the real estate market has begun, this one reflects, if compared to the "honeycomb" theory two "irregularities" (or abnormalities), as far as the succession of phases are concerned and particularly: during the year 2004 where, instead of a price stabilization together with a reduction in the number of sales (tract 3-4 of Figure 1), a consistent increase of both the variables has been registered; in the course of the year 2006 where, instead of a flexion of both prices and number of sales (tract 4-5 of Figure 1) has been registered a (light) flexion of the prices but even an increase of the number of sales.

According to the ASSIMIL data then, during the last ten years the Genovese real estate cycle shows, in the complex, a trend similar to the "honeycomb" picture (or hexagon) though, in some periods the trends of the values as far as the couples of variables are concerned, show a trend which is distant from the Dutch Researchers' theory.

We must put into evidence that the first "irregularity" (year 2004) is caused by "abnormal" values of both the variables (price and number of sales), while the second for the "abnormal" value of an only variable (number of sales).

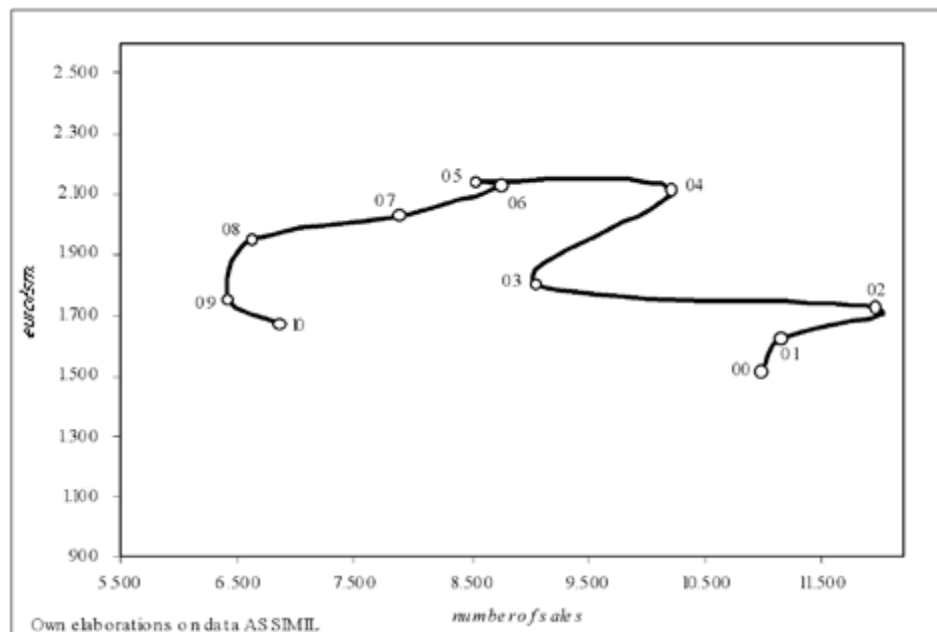
In relation to the same analysis developed according to the data of the Observatory OMI, this one shows more evident "irregularities" (Figure 7). The two first phases of the honeycomb cycle can be recognized between 2000 and 2003 (tract 1-2 and 2-3 of Figure 1), then a subsequent biennium (2004-2005) in which before both the medium price and the number of sales rise at the same time (year 2004), then they decrease (year 2005). From 2005 we can notice then the beginning of a new real estate cycle, whose representation reprehends the scheme of Figure 1.

Beyond the differences between the findings and the noted by the two Observatories and then represented in the Figures 6 and 7, the analysis reveals that are registered different trends, as far as the medium revealed values are concerned, particularly in the years 2005, 2006, 2007.

The ASSIMIL Observatory registers an increase of the prices between the years 2000 and 2005, then a constant flexion of the same in the course of the following years till 2010.

¹³ The authors thank the Association ASSIMIL, particularly it's President Ing. Lorenzo La Terra, for making available the data used in this work.

Figure 6. ASSIMIL data - Representation “honeycomb” cycle for the real estate market in Genoa - years 2000-2010 (at constant prices 2010).



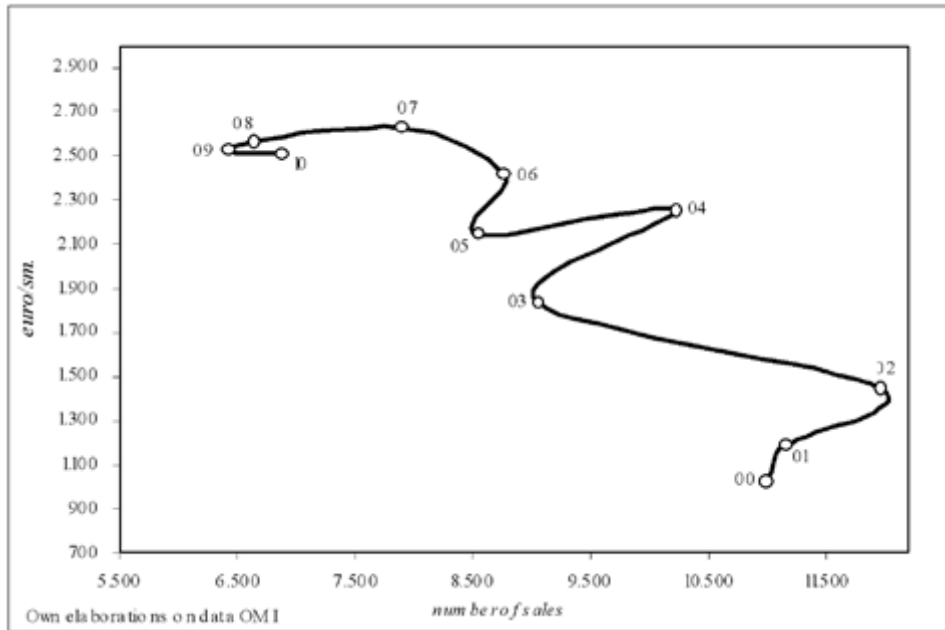
The OMI Observatory, instead, makes register an increase of the prices between 2000 and 2004, a flexion in 2005, a new increase in 2006-2007, and then a constant flexion till 2010.

That's to say that during some temporary periods of the decade 2000-2010, the two Observatories observe a different trend of prices, this phenomenon is more evident in the representation of the cycles¹⁴.

By developing the analysis inside the five selected areas (Figure 8), it's put into evidence an homogeneity of the trends observed by the two Observatories for the only area of Prè-Maddalena (BO3 area); for all the other four areas, the trend present homogeneity only for the years starting from 2007, though with some different changes in price, that's to say that, as far as these four OMI zones are concerned, the in-homogeneity is caused by the different trend of prices which has been registered between 2006 and 2007. According to ASSIMIL the pric-

¹⁴ The medium values calculated on the OMI data are relative to the “normal” state of properties. From the year 2000 till the first semester of 2003, the values are relative to the type 2 (“not intensive buildings”) and 3 (“intensive buildings”), as far as the second semester of 2003, and the following years are concerned, they are relative to the type 19 (“mansions”), 20 (“civil homes”), 21 (“economic homes”), 22 (“typical houses of the places”). It's not considered, as far as the calculation of the medium value is concerned, the type 1 (“villas and cottages”).

Figure 7. OMI data - Representation "honeycomb" cycle for the real estate market in Genoa - years 2000-2010 (at constant prices 2010).



es are in flexion in all the four areas, while according to OMI, they are growing.

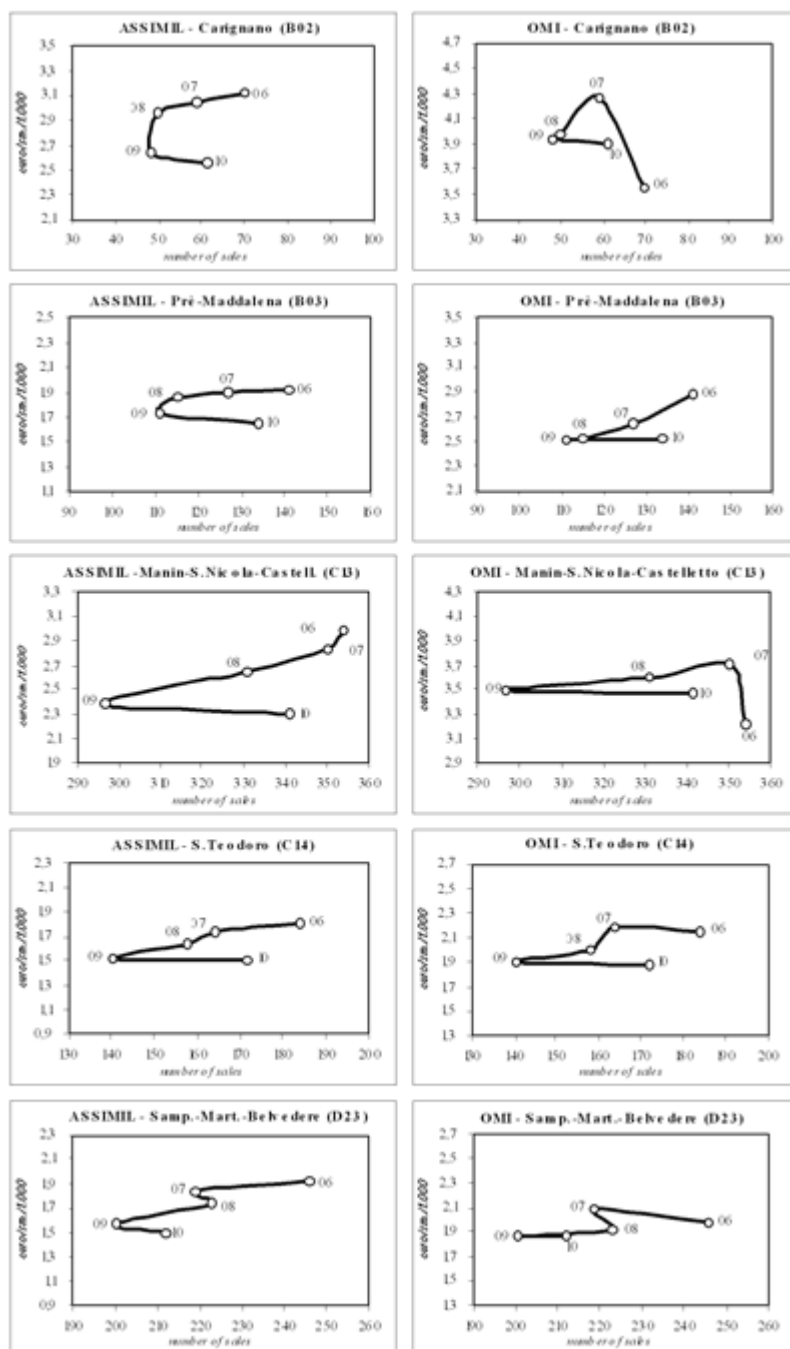
Then for the purposes provided, such in-homogeneity of the trend of the prices can lead to not available future forecasts, as far as the market values of properties are concerned, and to wrong interpretations of the phase of the cycle in which the real estate market is situated.

Taking as a reference the ASSIMIL data, the representation of the two indicators shown in the Figure 8 puts into evidence a constant decrease of prices and sales number in all the OMI areas from 2006 till 2009¹⁵. In the course of the year 2010, the Observatory detects a change in trend that occurs with an increase of the number of sales and a light flexion of the level of the medium prices ; according to the representation of the honeycomb cycle in Figure 1, these phase correspond respectively to the tracts 4-5 (period 2006-2009) and 5-6 (year 2010).

Then according to this theory, the forecasts for the year 2011 are those giving a confirmation around the increase of the number of sales and of a substantial holding of the level of prices respect to the year 2010. According to the ASSIMIL data, in 2012 the Genovese real estate market should enter a new cycle that would

¹⁵ We have an only exception, as far as the D23 area is concerned, where, during the year 2008, is registered an increase of sales respect to the year 2007.

Figure 8. The five OMI areas - Representation of the “honeycomb” cycle with the ASSIMIL and OMI data.



interest the next 2-3 years, and in which an increase of prices would be registered, as well as, more or less, as far as the next 1-2 years are concerned, even the number of sales (tract 1-2 Figure 1).

As far as, on the contrary, the data of the OMI Observatory are concerned, if we exclude the BO3 area, in which a substantial alignment with that found by ASSIMIL, the representation of the two index shown in Figure 8 puts into evidence an increase of the prices between 2006-2007 (particularly found in some areas such as BO3 and C13) and a decrease of the number of sales, the trend of the variables corresponds to the tract 2-3 of Figure 1. Then, instead of registering a stability of prices and a decrease of the number of sales, just like it's represented in Figure 1 (tract 3-4), during the years 2008-2009 the prices decrease together with the sales, that's to say that the market gets directly into a phase of flexion of the prices (more and more relevant in some areas) without having a first stabilization. In the year 2010 the prices keep substantially constant (light is, in fact, the flexion in more or less all the areas) while the number of sales increases. According to the "honeycomb" cycle representation in the Figure 1, these last phases correspond respectively to tract 4-5 (of the period 2007-2009) and 5-6 (of the year 2010).

That's to say that the representation of the real estate cycles according to the OMI data, as far as the homogeneous areas are concerned (except BO3 area) is characterized by the fact that the same lacks of the "equilibrium" phase that comes before the change of the trend of prices, and that corresponds to a period (more or less short) in which these last keep constant, even when (in more, or in less), the number of sales varies (tract 3-4 of Figure 1).

5. Conclusions

The study of the real estate markets and of their cycles over time, is of a fundamental importance as far as any correct setting of estimation, is concerned. If estimating means forecasting values, then the forecast of the past trend and the forecast of the future evolution, becomes the main element on which, every kind of valuation can be correctly set up.

The real estate market then, on the contrary of any other one, is strongly influenced by a series of variables: internal ones (endogenous) and external ones (exogenous), that make difficult the study and the comprehension of their evolution over time. The aim of the different models developed during these last years is that of studying which are the factors having more and more importance (or "weight"), as far as the explication of the evolution of the main indicators, is concerned. (level of prices, level of fees, etc).

Among the different models of the trend analysis, one of the more used is the one that takes as a reference some variables that are thought to be fundamental: the price and the number of sales. Their trend over time permits the identification of the phases and the consequent processing of trusted forecasts around the future trend of the same variables. The study of the cycles of the residential real estate market has been theorized by Janssen, Kuijt and Needham (Janssen, Kruijt

and Needham 1994), who have made the “honeycomb” cycle theory, based on the evolution of the two variables values over time.

The application of this theory to the Genovese real estate market has put into evidence that the cycles can be recognized, even if the succession of the phases made by the authors is not always respected.

In order to understand whether this theory is available and valid even inside the different segments of the real estate market, the study of the cycles has been applied to five homogeneous OMI areas, selected inside the territory of the Municipality of Genoa to which correspond even other realities of the market (for locational, urban and social conditions, etc.)

In order to point out the influence of the data on this kind of analysis (and then about the forecast of the future market trend) the study has been developed by taking as a reference two Observatories: the ASSIMIL (which operates only locally) and the OMI of the Agency of Territory. For reasons connected to the availability of some data, the analysis regards the last five years (from 2006 to 2010).

What emerges is that different ways of revelation may influence the interpretation of the phase of the cycle in which lies the real estate market and, therefore, not lead to reliable predictions of its evolution over time. It also to highlight the diversity represented in the sequence of steps according to data of the two Observatories interested a short period (years 2006-2007); the different trends of the values detected by the two Observatories for the average unit prices may have been influenced by reduced consistency of the data sample used for the calculation of the average value.

It's so important to have market data collected in a structured and uniform methodologies by several observatories operating at both local and national; that requires a database prepared according to a common standard and comparable with those adopted in Europe as long ago suggested by several studios (Simonotti 2008). Only in this way it will be possible the reliable predictions as far as the trend of the real estate market is concerned.

In the end, then, we're supposed to dispose of an historic series of data (possibly from different sources), able to represent a useful instrument to be considered in making a market estimation and to reduce the uncertainties connected to the valuation. Reducing the uncertainty means moreover even containing the risk that is an inherent characteristic of any decision.

Among the risks there are even the financial crisis, that are similar to hurricanes, that's to say true economic storms that, just like the forecast ones, can change direction or intensity in an unpredictably way (Roubini 2010).

These crisis are moreover not unusual events, rare and unlikely, they aren't black swans, they are usual phenomena, they are white swans that appear every time that the economy produces the conditions connected to the accumulation of the debt, bubbles that sooner or later will explode.

It's sure that studying how it went will be useful to contain the risk of what will happen in the future, most of all because, every now and then it happens that the mist of the hurricanes will be mistaken as the cause of the crisis, causing as a consequence a undue optimism (Roubini 2010).

Then, in the end, to put it how Luciano Ligabue¹⁶ would say (Ligabue 2011): “the best must still come out”. But just like Ligabue himself states, it’s worth to be optimistic because regardless of what the future holds, we will at least live a decent present.

In addition, just to complete, it does not mean that hard times must necessarily be the best, but must be the occasion for reflection and cultural as well as scientific growth.

And if even Albert Einstein says that, we can even believe in it: “we must not claim that all things will change, we must keep it up and go on doing the same things. The crisis can be a great blessing for people and nations, because a crisis brings progress. Creativity is born from anguish, just like the day is born from the darkest night. It’s in the crisis that the inventiveness, the discoveries and the most important strategies rise. Whoever overcomes a crisis, overcomes himself without being passed. All those who attribute their failure to the crisis their failures and discomforts, inhibit their talent and give more value to the problems than to their solutions. Incompetence is the real crisis. The greatest drawback of people and nations is the laziness in looking for solutions and ways out to their problems. There are no challenges without crisis, a life without challenges is only a routine a slow agony. Without crisis there’s no merit. It’s in the crisis that the best of each of us emerges, because without the crisis all winds only are mild breezes. Talking about crisis means to increase it, while keeping silent about the crisis means exalting the conformism. We’re working hard instead. Let’s stop once for all the only dangerous crisis, that is the tragedy of not being able to struggle in order to step out of it”.

Of course and always“the posterity will judge” (Manzoni 1821).

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¹⁶ Luciano Ligabue, Italian singer, writer and director. He has sold over ten millions of disks.

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